

# The genus *Olivancillaria* (Gastropoda: Olividae) in the Miocene of Chile: rediscovery of a senior synonym and description of a new species

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## ABSTRACT

Revision of historical collections from the Tertiary of Chile housed in Paris and in new collections in Santiago de Chile revealed the presence of an undescribed species of the olivid genus *Olivancillaria* d'Orbigny, 1840. Also, the used name of a common Miocene species, *O. tumorifera* (Hupé, 1854), is preceded by an almost completely ignored senior synonym. The older and therefore valid name for the known species is reintroduced as *O. claneophila* (Duclos, 1835), status and repository of type material is given, types are redescribed and figured and the new species *O. matanzana* is described. *Olivancillaria matanzana* differs from *O. claneophila* in having a higher spire, a less thick callus, and by lacking a node on the callus.

## INTRODUCTION

Only one species of the genus *Olivancillaria* d'Orbigny, 1840, has been described from the Chilean Miocene; that species is generally known as *Oliva tumorifera* Hupé, 1854. It is a common species of moderate local biostratigraphic potential because it occurs in almost all Miocene localities of Chile and is easily recognized. Thus it might help field geologists to date sediments on a provisional basis. Subsequent workers (e.g. Philippi, 1887; Möricke, 1896) used the name *O. tumorifera*, and only later Klappenbach (1966) realized that an earlier name existed for the species. This, however, remained unnoticed by subsequent workers (Fleming in Watters and Fleming, 1972; Tavera, 1979). Discovery of a new species of *Olivancillaria* in the Matanzas collection of V. Covacevich and D. Frassinetti in the Museo Nacional de Historia Natural, Santiago de Chile, initiated a deeper interest in this genus and lead to the rediscovery of the older name for the known species: *Oliva claneophila* Duclos, 1835.

The genus *Olivancillaria* d'Orbigny is usually referred

either to the year 1839 (e.g. Rios, 1994; Pastorino, 1995) or 1841 (e.g. Kantor, 1991). However, Burch and Burch (1964) showed the correct date to be 1840. Species of *Olivancillaria* today live predominantly along the Atlantic coast of South America but one species occurs also in India. Fleming (1972) discussed *Olivancillaria* as an Atlantic element in the Miocene fauna of Chile, but a wide distribution in the Pacific during the Miocene is indicated by the presence of *O. altensis* Beets, 1986 in the late Miocene of East Borneo (Beets, 1986). This formerly wide distribution explains the disjunctive Recent distribution in South America and India. *Olivancillaria* must have migrated from Chile across or around South America during the Miocene, but it is unknown where it survived during the Pliocene because there is no record of post-Miocene species from Chile and, on the other hand, there is no Neogene fossil record in Argentina. The genus is also absent in the Caribbean faunas from Neogene to Recent.

*Olivancillaria claneophila* has been found at almost all Miocene localities from the Navidad Region (Duclos in Chenu, 1846; Philippi, 1887; my own data) to Chiloé Island (Fleming, 1972; my own data). The new species has been found at a locality described by Frassinetti and Covacevich (1993) who, in an earlier paper (Covacevich and Frassinetti, 1980), also provided a preliminary list of the mollusk species encountered there. The fossiliferous level is situated on the tidal platform about one kilometer north of Matanzas ( $33^{\circ}57'27''$  S,  $W\ 71^{\circ}52'15''$  W) and is normally covered by beach-sand. The sediments range from mudstone to sandstone and yield a fauna somewhat unusual for the region, since a number of taxa are only known from this locality. The reason for this, however, is still unresolved. Macrofauna and sediments seem to indicate deposition in a near-coast environment, while benthic foraminifera and ostracods show that displacement into great depths ( $>1500$  m) occurred (Finger et al., 2003).

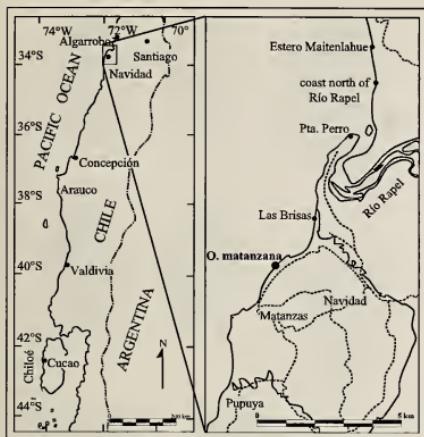


Figure 1. Type locality of *Olivancillaria matanzana* new species and localities of *O. claneophila* mentioned in the text.

The age of the Navidad Formation is still in debate. While some authors suggested a lower Miocene (Dremel in Herm, 1969; Tavera, 1979; Frassinetti and Covacevich, 1993) others gave an upper Miocene age (Tsuchi et al., 1990; Ibaraki, 1992) for the same locality. Both estimates were made with Foraminifera, the former also on the basis of mollusks. Dating of own foraminifer material (Finger et al., 2003) indicates a Late Miocene age for the localities containing *O. claneophila*.

## MATERIALS AND METHODS

Specimens described or mentioned in this study are deposited in the collections of the following institutions: Museo Nacional de Historia Natural, Departamento de Paleontología de Invertebrados, Santiago de Chile (SCO.PI); Muséum national d'histoire naturelle, Laboratoire de Biologie des Invertébrés marins et Malacologie (MNHN-BIMM); Laboratoire de Géologie (MNHN-LG), Paris, France and Senckenberg Museum Frankfurt am Main (SMF), Germany.

## SYSTEMATICS

Family Olividae Latreille, 1825

Genus *Olivancillaria* d'Orbigny, 1840

**Type Species:** *Olivaria brasiliensis* Chemnitz, 1788 (= *Porphyria urceus* Röding, 1798); Recent, Brazil to Argentina.

*Olivancillaria claneophila* (Duclos, 1835)

(Figures 2–7, 14–18)

*Oliva claneophila* Duclos, 1835: pl. 29, figs. 8, 9; Duclos in Chenu, 1846: 31, pl. 31, figs. 8, 9.

*Oliva tumorifera* Hupé, 1854: 217–218, Conch. pl. 3, fig. 8; Philippi, 1857: 72, pl. 8, fig. 9.

*Oliva pyriformis* Philippi, 1857: 73, pl. 8, fig. 11.

*Oliva lebuensis* Philippi, 1857: 73, pl. 8, fig. 13.

*Oliva otaeguii* Philippi, 1857: 74, pl. 8, fig. 21.

*Ancillaria tumorifera* (Hupé, 1854) Möricke, 1896: 572.

*Olivancillaria tumorifera* (Philippi, 1857) Ihhering, 1907: 514; Tavera, 1979: 90, pl. 16, fig. 43.

*Olivancillaria claneophila* (Duclos, 1835) Klappenbach, 1966: 77.

*Olivancillaria (Lintricula) tumorifera* (Hupé, 1854) Fleming, 1972: 398, figs. 6t, 6w.

**Diagnosis:** Shell elongate-oval with convex to angulated sides, solid; spire low, covered by thick callus. Columella with two prominent folds, upper fold splitting into four finer folds in juveniles. Heavy parietal callus with low, well-defined node. Suture channeled apparently only on three quarters of last whorl. Aperture sub-rectangular.

**Description:** The solid, elongate-oval shell has convex to angulated sides and is characterized by its low spire with very heavily developed callus. The callus covers the spire whorls completely and about one whorl of callus is visible. The columella is covered by callus, the lower part bearing two moderately prominent folds, of which the upper feathers into four finer ones in juveniles. The parietal-field produced by callus, bears a low, well-defined node. The suture is channeled but due to the heavy callus only visible on the last three quarters of the body whorl. The aperture is sub-rectangular.

**Type Material:** The specimen figured by Duclos is deposited in MNHN-BIMM (Figure 5, unnumbered, Navidad, height 35.4 mm). The specimen it is here regarded as holotype because there is no indication that he had seen other material. Holotype of *O. tumorifera* MNHN-LG Gg2002/75 (Figures 2–4, Topocalma, height 31.4 mm). Holotype of *O. otaeguii* SGO.PI.541 (Figures 14–15, Curaura, height 21 mm). Holotype of *O. lebuensis* SGO.PI.528 (Figure 16, Lebu, height 25 mm). Holotype of *O. pyriformis* SGO.PI.532 (Figures 17–18, locality unknown, height 33 mm).

**Other Material Examined:** Three specimens from the coast north of Rio Rapel, Navidad Formation; 23 specimens from Punta Perro, Navidad Formation; five specimens from Las Brisas, Navidad Formation; four specimens from Matanzas, Navidad Formation; one specimen from southern coast of Peninsula Chocoi near Carelmapu; 29 specimens from Cucao, Chiloé Island (all own collections). SMF 236001 (1 specimen, Punta Perro), SMF 326002 (20 specimens, north of Rio Rapel), SGO.PI.5495 (6 specimens, Punta Perro), SGO.PI.5498 (13 specimens, Estero Maitenlahue), SGO.PI.5528 (1 specimen, Rapel Norte), SGO.PI.5533 (2 specimens, Rapel Norte), SGO.PI.5550 (1 specimen, Rapel Norte), SGO.PI.5568 (1 specimen, Rapel Norte), SGO.PI.5577 (7 specimens, Rapel Norte).

**Type Locality:** The coast near Navidad. "Fossile du



**Figures 2-18.** Miocene *Olivancillaria* from Chile. **2-7.** *Olivancillaria claneophila*. **2-4.** Holotype of *Oliva tumorifera* Hupé, 1854, MNHN-LG Gg2002/75. **5.** Holotype of *Oliva claneophila* Duclos, 1835, MNHN-BIMM unnumbered. **6-7.** Juvenile specimen from Rapel, SMF 326001. **8-13.** *Olivancillaria matanzana* new species. **8-10.** Holotype, SGO.PL.6008. **11.** Paratype 1, SGO.PL.6009. **12-13.** Paratype 2, SGO.PL.6009. **14-18.** *Olivancillaria claneophila*. **14-15.** Holotype of *Oliva otageui* Philippi, 1887, SGO.PL.541. **16.** Holotype of *Oliva lebuensis* Philippi, 1887, SGO.PL.528. **17-18.** Holotype of *Oliva pyriformis* Philippi, 1887, SGO.PL.532. Note that specimen in Figure 5 is uncoated while all others are coated with magnesium oxide.

Chili (...) il appartient au terrain tertiaire recouvrant le granit de la Trinidad, canton de la Navidad, et ne se rencontre que sur les escarpements des bords de la mer" (Duclos in Chemu, 1846, p. 31).

**Occurrence:** Southern Peru (DeVries and Frassinetti, 2003) to Chiloé, southern Chile (Fleming, 1972; own data); lowermost to upper Miocene.

**Discussion:** Of the South American species, *Olivancillaria claneophila* most resembles *O. deshayesiana* (Ducros de Saint Germain, 1857) in having convex whorls and a low spire. It differs from that species through the presence of a callus node on the parietal area. *Olivancillaria claneophila* also resembles *O. carcellesi* Klappentbach, 1965, as figured by Pastorino (1995). From this it differs in its broader, heavier shell, a concave columella and a well-defined node on the parietal callus. *Olivancillaria vesica* (Gmelin, 1791) differs from *O. claneophila* in having more convex whorls, especially in adult specimens. It also has a node on the parietal callus, but a bigger and less defined one. *Olivancillaria vesica* has a narrower spire, an upward-pro-

jecting inner-lip callus and the columella is angulated at about half height, all these features cannot be observed in *O. claneophila*. *Olivancillaria urecus*, type species of the genus, has a conical shell with an almost flat spire and slightly convex sides, while *O. claneophila* has a more angulated shell with a low, heavily calloused spire.

The type specimens of *O. lebuensis* and *O. pyriformis* are not well preserved but comparison with the available material, containing specimens of a wide range of preservation quality, confirms the synonymy. The prominent groove on both specimens resembles a pseudolivid groove (see Vermeij, 1998; Nielsen and Frassinetti, 2003); that groove, however, seems to represent a preservation artifact.

#### *Olivancillaria matanzana* new species (Figures 8-13)

**Diagnosis:** Shell elliptic with convex to angulated sides; spire moderately high, covered by callus. Columella with prominent fold, above it a second one, splitting into four finer folds in juveniles. Strong parietal cal-

lus. Suture about three quarters of the last whorl channeled.

**Description:** The elliptic shell has convex sides and is characterized by its moderately high spire with well-developed callus covering the spire whorls. The columella is covered by callus, the lower part bears two moderately prominent folds, of which the upper splits into four finer ones in juveniles. The suture is channeled but due to the heavy callus only visible on the last three quarters of the body whorl.

**Type Material:** Holotype SGO.PI.6008 (Figures 8–10, Matanzas, height 40.9 mm), four paratypes SGO.PI.6009 (Figures 11–13, Matanzas).

**Other Material Examined:** Further ca. 20 specimens (unnumbered) present in the Matanzas collection of Frassinetti and Covacevich (SGO.PI).

**Type Locality:** Intertidal platform about 1 km north of Matanzas, Navidad Formation, Central Chile.

**Occurrence:** Only known from type locality, upper Miocene.

**Etymology:** After the type locality near the village of Matanzas.

**Discussion:** *Olivancillaria matanzana* has a higher spire and a thinner callus on it than *O. claneophila*. It also lacks a prominent node on the parietal callus. No intermediate forms have been found. Both species occur together at the Matanzas locality, but *O. matanzana* is known from nowhere else. *Olivancillaria matanzana* resembles *O. carcellesi* even more than *O. claneophila*, but *O. carcellesi* has a high aperture, almost as high as the shell, while *O. claneophila* and *O. matanzana* have lower apertures. *Olivancillaria vesica* has a narrower and lower spire than *O. matanzana*.

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